

REMARKS

Claims 1-85 have been canceled without prejudice. Claims 86-90 have been added. Claims 86-90 are pending.

The applicants are appreciative of the recent telephone interviews between the Examiner and applicants' counsel. In the interview of May 5, 2005, it was agreed that the McLeish reference (U.S. Patent No. 5,014,238, hereinafter McLeish) clearly requires four terminals to connect a field device 4 to a channel (see, for example, column 4, lines 30-34), but the present application is directed to interfacing sensors 70 and actuators 72 that require only two terminals 101, 102. Also, McLeish is directed to "sequentially sensing any input signals and providing any output signals" (see, for example, the Abstract) and the Sitte reference (U.S. Patent No. 5,469,150, hereinafter Sitte) is clearly directed to a bus topology that utilizes "a digital bit stream" (see, for example, the Abstract and Fig. 1), where individual sensors and actuators are communicated in a "sequential" manner.

In contrast, the present application is directed to a comprehensive interface circuit (see, for example, the Abstract) that comprises sensors 70 or actuators 72 that are in simultaneous communication (see, for example, page 3, lines 14-15 and Fig. 1) with a controller 14, via at least two comprehensive input/output (I/O) engines 15 (a.k.a., physical packages, see, for example, page 4, lines 21-23 and Fig. 1). Two terminals 101, 102 and a plurality of mode circuits (see, for example, Mode 1-7 in Fig.

1) are disposed on each I/O engine 15 (see, for example, Fig. 1), where each set of terminals 101, 102 are capable of being in electrical communication with each set of the mode circuits, which can accomplish digital input, digital output, analog input, and analog output (see, for example, page 4, lines 17-19).

Each physical package 15 is electrically connected directly (i.e., by way of individual connections 74-77), exclusively (i.e., there are no other connections attached to terminals 101, 102, see, for example, Fig. 1), and physically (i.e., there is no electrical/electronic bus nor a wireless means illustrated in Fig. 1 that connect to terminals 101, 102).

The controller 14, which is external to the physical packages 15, is capable of simultaneously receiving a condition from each sensor and is capable of sending commands to each actuator (see, for example, page 3, lines 14-15 and page 4, lines 4-12).

The physical package 15 can further comprise a point controller 12 disposed thereon (see, for example, Fig. 1). The comprehensive interface circuit can further comprise a bridge 10 (see, for example, Fig. 1), an isolation block 11 (see, for example, Fig. 1), and a monochrome serial interface 1200 (see, for example, Fig. 16).

Thus, new claim 86 defines a comprehensive interface circuit, which simultaneously senses input devices and output devices. The comprehensive interface circuit comprises first and second physical circuit packages, where each package has a first electrical terminal, a second electrical terminal and a plurality of mode circuits

disposed thereon, wherein the plurality mode circuits can accomplish digital input, digital output, analog input, and analog output. The physical circuit packages being individually electrically connected directly, exclusively, and physically to a single sensor or a single actuator, but not both simultaneously, via only the respective first electrical terminal and the second electrical terminal of each physical circuit package. Each set of first electrical terminal and second electrical terminal are capable of electrical communication with their respective plurality of mode circuits.

A controller that is external to the physical circuit packages is capable of simultaneously receiving a condition from each sensor and capable of simultaneously sending commands to each actuator.

The references, taken alone or in combination, fail to teach or suggest the claimed invention as defined in independent claim 86. Therefore, claim 86 and its dependent claims 87-90, are patentable over the references. Favorable reconsideration of this application is respectfully requested in light of the preceding amendments and detailed discussion.

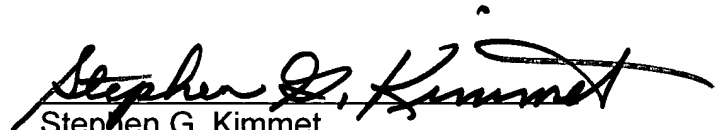
CONCLUSION

For all the reasons described in the preceding paragraphs, the applicants respectfully submit that the present application is now in condition for allowance. Accordingly, a timely action to that end is courteously solicited.

Appl. No.09/915,188
Amdt. Dated May 6, 2005
Reply to Office action of January 6, 2005

If the Examiner has any remaining questions or concerns, or would prefer claim language different from that included herein, the favor of a telephone call to the applicants' attorneys/agent is requested.

Respectfully submitted,


Stephen G. Kimmet
Registration No. 52,488

ATTORNEYS/AGENT

Marshall & Melhorn, LLC
Four SeaGate – 8th Floor
Toledo, Ohio 43604
Phone: (419) 249-7132
Fax: (419) 249-7151